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COSTS OF USING COTTON BASKET-STORAGE SYSTEMS

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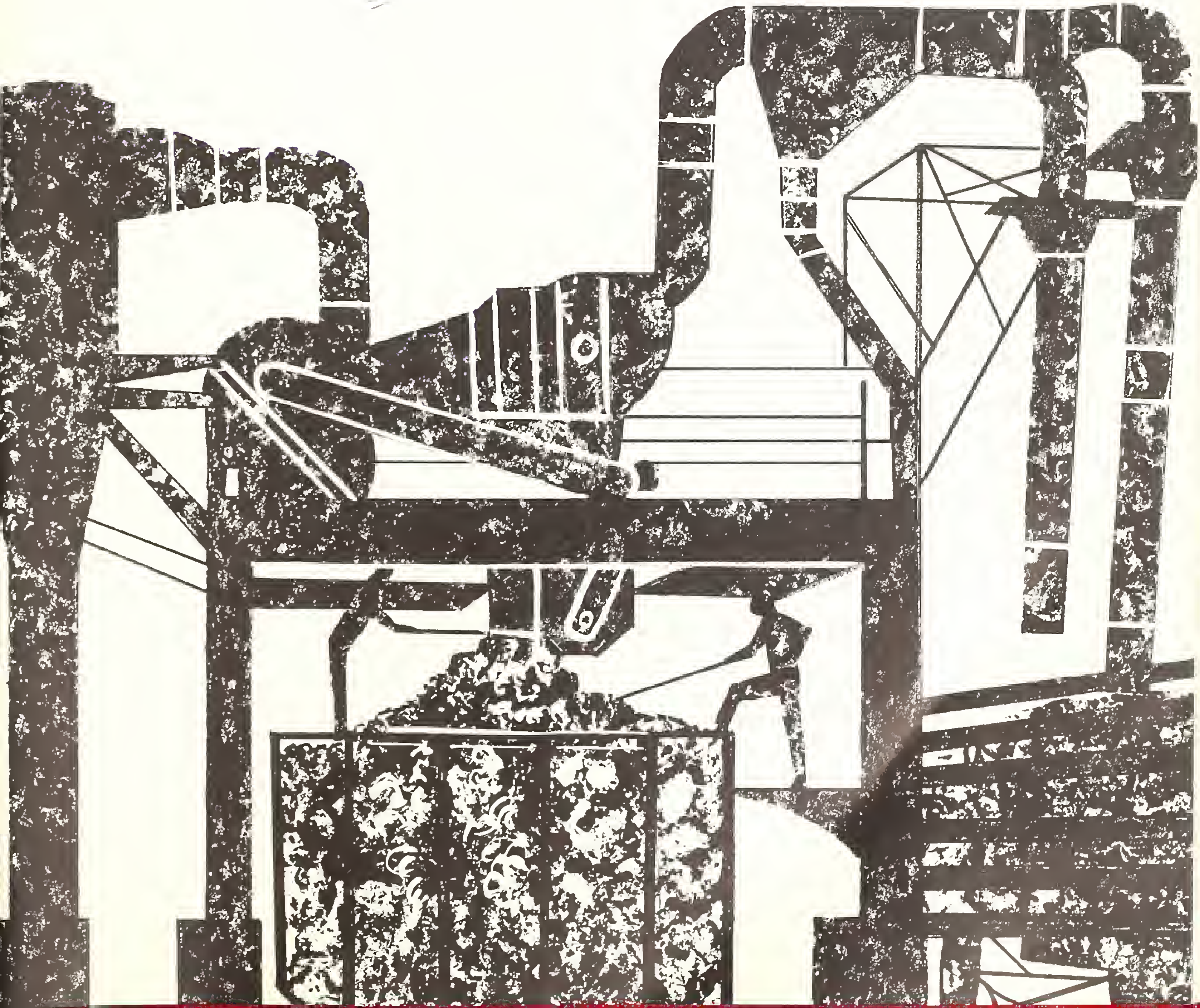

FARMER COOPERATIVE SERVICE
U. S. DEPARTMENT OF AGRICULTURE
5a WASHINGTON, // D. C. 20250

Joseph G. Knapp, Administrator

The Farmer Cooperative Service conducts research studies and service activities of assistance to farmers in connection with cooperatives engaged in marketing farm products, purchasing farm supplies, and supplying business services. The work of the Service relates to problems of management, organization, policies, financing, merchandising, quality, costs, efficiency, and membership.

The Service publishes the results of such studies; confers and advises with officials of farmers' cooperatives; and works with educational agencies, cooperatives, and others in the dissemination of information relating to cooperative principles and practices.

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November 1965 //

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Highlights

Basket storage is a relatively new and promising method for storing seed cotton during the peak of harvest and ginning it later. One California gin has been using baskets since 1951, but most gins have begun in the last 5 years.

Members and directors of cooperative gins and owners of other gins can use results of this study as a guide when planning to increase volume beyond that which their present gin will handle.

Storage in baskets was estimated to cost about \$4.80 to \$6.20 a bale in the San Joaquin Valley of California when 1.5 bales are stored per bale of basket capacity. In the Lubbock area of Texas, these costs ranged from about \$5.50 to \$6.75 a bale. Costs were higher in Texas than California, largely because fewer bales of machine-stripped cotton could be stored per basket. These estimated basket-storage costs apply to all sizes of gins.

Ginning basket-stored cotton was estimated to cost \$5.30 to \$5.75 a bale in California and \$6.00 to \$6.15 a bale in Texas. These costs are less than one-half the costs of ginning cotton from trailers in the usual manner. This is largely because depreciation and other fixed costs on gins are not included as a cost for ginning basket-stored cotton. Fixed costs on gins were applied entirely to cotton ginned in the conventional way because those costs exist whether or not cotton is ginned from baskets. Less labor is required, and this also lowers the cost of ginning basket-stored cotton.

In most cases, management of a particular gin will need to substitute their own ginning costs for the estimated costs used for examples in this report. Costs shown in this report were estimates based on gins with 10-bale-an-hour capacity. Costs of specific gins in these and other areas, and gins of other capacities may be different.

The cost of basket storage is an expense not involved in conventional ginning. However, when costs for basket storing and ginning are combined, they compare favorably with costs of ginning in the usual way. Combined costs for basket storage and ginning ranged from \$10.10 to \$11.98 a bale in California, compared to a cost of $12.47 a bale when ginned from trailers. In Texas, basket-storage and ginning costs ranged from $11.53 to $12.89 a bale, compared to $14.82 a bale when ginned from trailers.

When the costs of storing and ginning basket-stored cotton were combined with conventional ginning costs, in both States total cost per bale was lower for all volumes than costs for ginning solely in the conventional way. These total costs ranged from $11.28 to $12.40 a bale in California and from $13.27 to $14.54 a bale in Texas. These costs applied to all of the cotton ginned, since costs were averaged on all bales handled.

Basket-storage capacities can be adjusted more closely to various volumes of cotton produced by members than can gin capacities. This has a very important effect on costs, and in some cases, can amount to a reduction of $5 a bale. Excess basket capacity can be carried at lower cost than excess gin capacity.

Estimated investments in California for basket-storage systems ranged from about $36 per bale stored on 1,000-bale size to $25 a bale for 6,000-bale size. Similar investments in Texas ranged from about $34 per bale stored for 1,000-bale size to $24 a bale on a 4,000-bale size. The sheds, used in California for protecting cotton stored in baskets, accounted for the larger investments there than in Texas, where tarpaulins were used.

Inadequate capacity of unloading equipment was the most common problem in basket storage among gins studied. Some ginners were also finding it difficult to keep accurate records of ownership on cotton stored in baskets.

It appears more efficient for baskets to be owned by ginners rather than growers, because then the baskets can be refilled more often.

Gin managers reported a range of experience from no change to substantial improvement in quality of cotton stored in baskets.

Each of the six managers of cooperatives expect basket storage to expand. They ginned cotton from basket storage faster than they could from trailers. One manager said he could gin 20 percent faster from baskets. Greater uniformity of moisture was an important factor in the faster ginning rates.

COSTS OF USING COTTON BASKET-STORAGE SYSTEMS, CALIFORNIA AND TEXAS, 1964

3a

by John D. Campbell
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The purpose of this study was to determine the approximate cost of using basket-storage systems. Examples of cost of ginning stored cotton, and examples of total costs for plants using this method were developed. In addition, information was shown on costs for selected volumes, factors that affect costs, problems, and prospects for basket storage.

Members and directors of cooperative gins and owners of other gins can use results of this study as a guide when they consider ways to extend volumes beyond the capacity of their present gins.

As considered in this report, basket storage is a method for handling seed cotton when it is harvested faster than it can be ginned. Growers now harvest most of the cotton crop in 3 weeks with harvesting machines. Formerly, when cotton was harvested by hand, the peak period of cotton harvesting lasted 2 or 3 months. Although capacities of gins have been increasing, many plants cannot gin the cotton as fast as growers now harvest it.

Baskets are large containers which hold from 3 to 10 bales each. Cotton harvested in the peak of the season, beyond the capacities of gins, is transferred from growers' trailers to baskets and stored. The basket-stored cotton is ginned later when gins would otherwise be idle.

In most instances, the amount of cotton the gin will initially plan to handle through baskets will be less, or perhaps equal, to the amount they handle and gin in the conventional manner directly from trailers. For example, a gin may handle 6,000 bales directly from trailers, and 4,000 bales temporarily stored in baskets. Some gins may later increase their number of baskets to such an extent that most of their cotton is ultimately ginned by this method. In those cases, the level and relationships between some of the cost items might be somewhat different from those included in this analysis. This study analyzed only the costs involved in handling 1,000 to 6,000 bales of basket-stored cotton.

Farmer Cooperative Service is conducting other research on storage and handling systems which will include even greater use of temporary storage of cotton before ginning than considered here. Findings of that research, including comparison of handling systems, will be published when completed.

The Economic Research Service recently published a report, "Cost of Storing Seed Cotton," Marketing Research Report No. 712, which includes estimated costs for storing cotton in baskets and for ginning it. However, the sources of data used in that report were different from those used in this study. For example, basket costs used in the earlier report were estimated by engineers in the Agricultural Research Service, while those used in this report were estimated from a survey of six cooperative gins that were using basket-storage systems. Other differences in data used included variations in capacities and costs of gins, labor used for storing cotton in baskets and for ginning basket-stored cotton, rates used for depreciation, times baskets were refilled, and methods followed in handling fixed costs.

As might be expected, differences in the data used and in the methods of analyses resulted in different conclusions. When only a few gins are using storage baskets, there are likely to be wide variations in practices, costs, and results.

Method of Study

Data were collected by personal interview with six of the seven gin cooperatives known to use basket storage for the 1963 crop. These six were in California and Texas. Other data included previous studies by Farmer Cooperative Service, trade papers, and electric power rate schedules.

The basket-storage operations of the six gins studied varied widely. California gins stored only machine-picked and "ground" cotton (picked off the ground with salvage machines). Most of the Texas gins stored only machine-stripped cotton, but one of them stored both machine-picked and hand-snapped cotton.

Other differences also existed between California and Texas, such as rates for electricity, taxes, insurance, and wages. In California, baskets of seed cotton were stored under sheds, but were covered with tarpaulins in Texas.

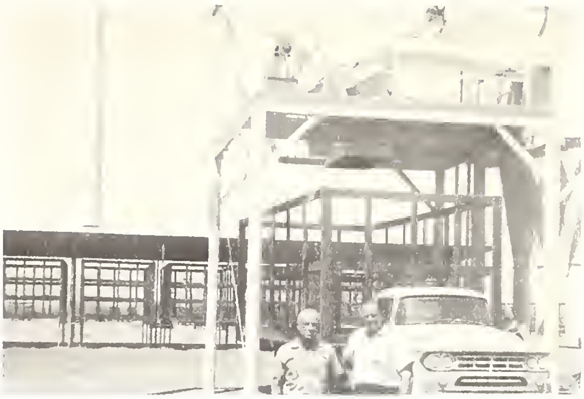
The six cooperatives operated from 1 to 3 gins and ginned from about 3,500 to 25,000 bales during the 1963 season. They stored from 500 to 5,000 bales of seed cotton and used from 50 to 500 baskets. The amount of cotton stored ranged from 0.8 to 3.5 bales per bale of basket capacity. Labor used to store cotton in baskets ranged from 0.4 to 1.4 man-hours per bale.

These features of the cooperative gins provided a large amount of data for this study. But direct comparison of data from the gin records does not provide the most useful analysis of the basket-storage method.

As a result, a model approach was used to estimate total costs of storing various volumes in baskets. In addition to storage costs, unloading costs connected with basket storage were included. The model approach, as used in this report, consists of developing investments, costs, and other characteristics of basket storage, on the basis of data collected from actual operations and from supplementary data. Actual data or averages were used where feasible. Calculations and estimates, based on actual and supplementary data, were used to complete the costs and analysis.

This model method provides comparisons and conclusions based on as nearly similar equipment and practices as possible. This method further provides conclusions based on a level of efficiency that is within reach of most gin managers. It does not set up or imply a goal for basket-storage operations.

For this analysis, capacity of equipment to unload cotton from trailers into baskets was the highest among the gins surveyed (see photo). High capacity in unloading systems is needed for efficiency. Other factors used in developing costs, except a storage capacity of 6,000 bales, were within the ranges of this survey. Most of the factors used were near the middle of ranges or close to averages of actual operations.



High capacity unloading equipment of type included in cost estimates in this report. This equipment will transfer 9 or more bales of machine stripped cotton and 13 or more bales of machine picked per hour from growers' trailers to storage baskets.

The estimated basket-storage costs may be used by gins of all capacities.

Because of the wide differences in operations of the six cooperative gins using baskets, conventional ginning costs reported from another study done in the San Joaquin Valley and Lubbock areas were considered preferable for use in examples for this study.[1] Costs of ginning basket-stored cotton were developed from MRR 640.

The ginning costs used in examples in this report represent those for gins of 10-bale-an-hour capacity in the San Joaquin Valley of California and the Lubbock area of Texas. Costs of specific gins in these and other areas, and particularly for gins of other capacities, may be different from these examples. In most cases, management of a gin can apply findings of this study to their operations by substituting their own ginning costs for those given in this report.

[1] Campbell, John D Cost of Ginning Cotton by Cooperatives at Single-Gin and Two-Gin Plants, California and Texas, 1962 U S Dept Agr , Farmer Cooperative Serv., Mktg. Res Rpt 640, Jan 1964

Costs to gins on basket-stored cotton include those for both storing and ginning. These gins also have costs on cotton ginned directly from trailers like other gins. Therefore, costs of storing and ginning basket-stored cotton were combined with costs of ginning from trailers to provide examples of total costs for gins using basket storage.

Equipment and Investment

Most gins used standard gin equipment to transfer cotton from farmers' trailers to baskets for storage (figs. 1 and 2, pp. 10-11). Some cooperatives built their unloading system with used equipment; others had a combination of used and new machinery; and some had all new machinery, except tractors.

None of the cooperatives in this study had bur extracting equipment in their basket-storage systems, although some other gins were using such equipment.[2]

Equipment assumed in the investments that follow was new except the tractors. Extracting equipment was not included. New baskets and covers will likely be required for several years by all gins that add basket storage. Used unloading equipment may be satisfactory and less costly for volumes under 1,000 bales and, under some conditions, perhaps for volumes up to 2,500 bales.

Although sizes of baskets varied, most of them were 10' wide x 8' high x 25' long (fig. 3). Steel basket frames were most common, but some had wood frames. Wire with mesh 1" x 2" was commonly used to enclose sides of baskets, but 1" poultry wire was also used. Floors were mostly 1" x 6" or 2" x 6" wood, laid lengthwise. Most baskets had legs made of 2" pipes about 30" long, with a rectangular piece of steel across the bottom of legs.

Used farm tractors and hydraulic lifts (figs. 4 and 5, p. 11) -- steel frames mounted on two four-wheel units raised and lowered hydraulically -- were used for moving baskets.

California gins used sheds for protecting cotton stored in baskets, while Texas gins used tarpaulins. One California cooperative formerly used tarpaulins (figs. 6 and 7) but changed to sheds.

Estimated total investments required in California basket-storage systems ranged from $35,975 for 1,000 bales, to $150,300 for 6,000 bales (table 1). Average investment per bale stored ranged from $36 on 1,000 bales to $25 on 6,000 bales. In Texas, total investments were estimated to range from $33,700 for 1,000 bales to $94,300 for 4,000 bales (table 2). Average investment per bale stored ranged from about $34 on 1,000 bales to about $24 on 4,000 bales. The largest investment item was baskets. In California, however, sheds cost nearly as much as baskets.

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[2] See The Cotton Gin and Oil Mill Press, March 2, 1963, issue, p. 10, and the November 10, 1962, issue, p. 7; also, The Cotton Trade Journal, March 6, 1964, issue, p. 5.

The largest estimated volume stored for California per unit was 6,000 bales, while the largest for Texas was 4,000 bales. Only 4,000 bales were shown for Texas because that volume is close to the maximum capacity of 1 unit of unloading equipment on machine-stripped cotton; however, it could handle 6,000 bales of machine-picked cotton.[3]

Storage of equal numbers of bales required more baskets and considerably more investment in baskets in Texas than in California. This is because only about 7 bales of machine-stripped cotton is stored in the baskets in Texas, compared with 10 bales of machine-picked cotton stored in California.

Freight costs were higher on unloading equipment in California than in Texas. But the overall cost of unloading facilities -- including cost of the equipment, steel framing, freight, installation, and especially construction of wind barriers to protect baskets while being filled in the Lubbock area -- caused the total estimated cost to be $500 more for Texas than for California.

[3] It was estimated that the high-capacity gin unloading equipment would transfer 9 bales of machine-stripped or 13 bales of machine-picked cotton per hour from trailers to baskets. The peak of harvest now lasts about 21 days. If no cotton were stored the last day of the peak, 20 days would be left. Twenty days of 24 hours equals 480 hours and 480 x 9 bales equals 4,320 bales, or full capacity of unloading system for machine-stripped cotton. But 480 x 13 bales equals 6,240 bales or full capacity of 1 system on machine-picked cotton.

Table 1. -- Estimated investments required in basket-storage systems for handling selected volumes, San Joaquin Valley, California, 1964[1]

Investment item	Investments required by bales stored annually--					
	1,000	2,000	3,000	4,000	5,000	6,000
	Dollars					
Baskets @ $175.00 each--------	11,725	23,450	35,000	46,725	58,450	70,000
Covers for baskets (sheds) ---	10,050	20,100	30,000	40,050	50,100	60,000
Unloading equipment[2] ----------	11,500	11,500	11,500	11,500	11,500	11,500
Hydraulic lift(s) @ $2,000 each --------------------------	2,000	4,000	4,000	4,000	4,000	6,000
Used tractor(s) @ $700 each --	700	1,400	2,100	2,100	2,100	2,800
Total -------------------	35,975	60,450	82,600	104,375	126,150	150,300
Average investment per bale stored ------------------------	35.97	30.22	27.53	26.09	25.23	25.05
Number of baskets required	67	134	200	267	334	400

[1] Based on storage of 1.5 bales per bale of basket capacity and 10' x 8' x 25' baskets holding 10 bales of machine-picked cotton. Investments were estimated on cost of new equipment, except for tractors.

[2] Based on inclusion of swinging telescope, large fan, 70 horsepower of electric motors, green boll trap, piping, wad breaking cylinder, separator, dust cyclones, steel framing, wiring and installation, but no extracting equipment.

Investments required per bale stored declined by about $10 per bale from smallest to largest volumes in both California and Texas (tables 1 and 2). Larger volumes reduced unit investments in unloading equipment because the same unloading equipment handles from 1,000 to 6,000 bales in California and from 1,000 to 4,000 bales in Texas.

Table 2. -- Estimated investments required in basket-storage systems for handling selected volumes, Lubbock area of Texas, 1964 [1]

Investment item	Investments required, by bales stored annually--			
	1,000	2,000	3,000	4,000
	Dollars			
Baskets @ $175.00 each	16,625	33,425	50,050	66,675
Covers for baskets (tarpaulins @ $25 each)	2,375	4,775	7,150	9,525
Unloading equipment and wind protection [2]	12,000	12,000	12,000	12,000
Hydraulic lift(s) @ $2,000 each	2,000	4,000	4,000	4,000
Used tractor(s) @ $700 each	700	1,400	2,100	2,100
Total	33,700	55,600	75,300	94,300
Average investment per bale stored	33.70	27.80	25.10	23.57
Number of baskets required	95	191	286	381

[1] Based on storage of 1.5 bales per bale of basket capacity and 10' x 8' x 25' baskets holding 7 bales of machine-stripped cotton. Investments were estimated on cost of new equipment, except for tractors.

[2] Based on inclusion of swinging telescope, large fan, 70 horsepower of electric motors, green boll trap, piping, wad breaking cylinder, separator, dust cyclones, steel framing, wiring and installation, and wind barriers, but no extracting equipment

Basket-Storage Costs

Basket-storage costs include all costs of unloading trailers into baskets, moving baskets to the storage area, and protecting the cotton with tarpaulins or sheds while it is stored in baskets. Unloading the baskets at the time of ginning is an operation similar to unloading from trailers. This is a cost of conventional ginning, and no charge needs to be made for this part of the operation.

In the San Joaquin Valley of California, total estimated costs of storing seed cotton in baskets ranged from $6.22 a bale on 1,000 bales to $4.79 a bale on 6,000 bales (table 3). In Texas, costs were similar, ranging from $6.73 on 1,000 bales to $5.52 on 4,000 bales (table 4). These costs were based on storing 1.5 bales during the season in each bale of basket capacity. This ratio

Table 3. -- Estimated total costs for basket storage, per bale and by volumes stored, San Joaquin Valley of California, 1964

Cost item	Storage cost per bale, by volumes stored annually --					
	1,000	2,000	3,000	4,000	5,000	6,000
	Dollars					
Variable costs:						
Labor	1.45	1.45	1.45	1.45	1.45	1.45
Power	.15	.09	.07	.06	.06	.05
Other[2]	.30	.30	.30	.30	.30	.30
Total	1.90	1.84	1.82	1.81	1.81	1.80
Fixed costs:[3]						
Depreciation	2.88	2.42	2.20	2.09	2.02	2.00
Interest	.90	.75	.69	.65	.63	.62
Taxes, property	.45	.38	.34	.33	.32	.31
Insurance on basket system	.09	.07	.07	.06	.06	.06
Total	4.32	3.62	3.30	3.13	3.03	2.99
Grand total	6.22	5.46	5.12	4.94	4.84	4.79

[1] Based on storage of 1.5 bales per bale of basket capacity.

[2] Includes costs for tractor fuel, oil, and repairs.

[3] On baskets, basket covers (sheds), unloading equipment, hydraulic lift(s), and tractor(s)

is equivalent to filling all baskets once, then ginning cotton from one-half of them during slack periods in the peak of harvest, such as after rains, and refilling them once before the peak of harvest is over. This ratio is the same as the average for the six gins used in this study.

Costs for California and Texas were subdivided into fixed and variable (tables 3 and 4). Variable costs were subdivided into labor, power, and other, and fixed costs into depreciation, interest, taxes, and insurance on the basket systems. Insurance cost was for fire and extended coverage on the basket-storage systems, but not on seed cotton. Fire insurance on seed cotton was the same per bale whether stored in baskets or ginned from trailers, and, consequently, was not included in costs of basket-storage systems.

California gins used an average of 0.57 man-hour per bale for storing cotton averaging $1.32 a bale. Ten percent of that cost was added for social security, workmen's compensation, and unemployment insurance paid by the gin plants which brought labor costs to $1.45 a bale.

The Texas cooperatives used an average of 1.11 man-hours a bale for storing cotton costing an average of

Table 4.--Estimated total costs for basket storage, per bale and by volumes stored, Lubbock area of Texas, 1964

Cost item	Storage cost per bale, by volumes stored annually [1] --			
	1,000	2,000	3,000	4,000
	Dollars			
Variable costs:				
Labor	1.63	1.63	1.63	1.63
Power	.20	.16	.14	.14
Other [2]	.30	.30	.30	.30
Total	2.13	2.09	2.07	2.07
Fixed costs: [3]				
Depreciation	3.46	2.99	2.77	2.65
Interest	.84	.69	.63	.59
Taxes, property	.18	.15	.14	.13
Insurance on basket system	.12	.10	.09	.08
Total	4.60	3.93	3.63	3.45
Grand total	6.73	6.02	5.70	5.52

[1] Based on storage of 1.5 bales per bale capacity of basket.

[2] Includes costs for tractor fuel, oil, and repairs.

[3] On baskets, basket covers (tarpaulins), unloading equipment, wind barrier, hydraulic lift(s), and tractor(s).

$1.48 a bale. When 10 percent was added for social security and other payroll expenses, total cost of labor was $1.63 a bale.

Apparently, gins can manage labor adjustments fairly closely to needs in a peak period. For that reason, the same cost per bale for labor was used for all volumes.

Power costs were calculated on the basis of 70 horsepower of motors in each State for unloading systems, and electric rate schedules applying to many gins in the areas were used. Further details of procedures used for calculating power costs are given in the appendix, p. 24.

"Other costs" include an allowance for gasoline, oil, and repairs for tractors and for other items of cost not covered by items listed.

Fixed costs were based on the investments in basket-storage systems, as shown in tables 1 and 2. Depreciation was calculated at a rate of 8 percent (or average life of 12.5 years), except 40-percent rates were used on tarpaulins in Texas. Depreciation costs were higher in Texas, largely because more basket space was required per bale to store machine-stripped cotton. As stated earlier, the baskets held 10 machine-picked bales in California, but only 7 machine-stripped bales in Texas. Ratios of 1.5 bales stored per bale of basket capacity were used for both States.

Interest was calculated at a rate of 5 percent on average investment for the life of the system. Interest was included here to show the effect of different investments per bale stored for the selected volumes and for comparisons with costs of ginning from trailers.

Tax and insurance rates used were the same as those reported in MRR 640.

Application of Basket-Storage Costs

The costs estimated for storing cotton in baskets have wide application. They can be used with various sizes of single- and multiple-gin plants that need 1,000 to 6,000 bales more capacity. Costs for over 6,000 bales could be developed by combining costs of additional units and perhaps making adjustments in labor costs in some cases. These costs also apply in other areas, where cost levels and other conditions are similar to either those in the San Joaquin Valley or in the Lubbock area.

In other areas, where conditions or price levels are substantially different, these estimates may be adjusted. Or they may be used as guides for making new estimates suitable for the situation.

Costs of ginning cotton stored in baskets and total costs of gin plants using basket storage are both much more closely restricted to specific conditions than are costs for storing.

Ginning costs differ by sizes of gins even when all of the sizes are operated at full capacities. Costs per bale are also different for a single-gin plant than a multiple-gin plant that handles the same volume per gin.

The effect on total cost of ginning the increased volume made possible by basket storage may also differ between gins for various reasons. For example, the cooperatives included in the survey used labor, which would have been idle otherwise, to gin from 25 to 100 percent of the cotton stored in baskets. So the additional cost of labor for ginning the stored cotton would have ranged from none to 75 percent.

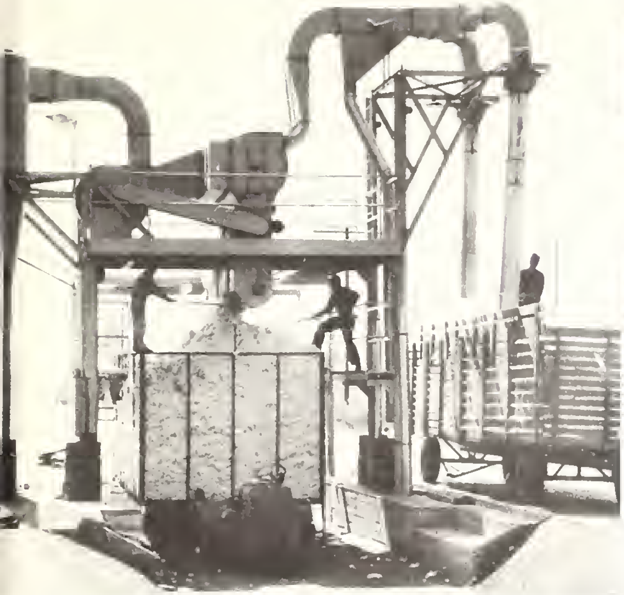
Because ginning costs are closely related to specific situations in the manner described, two examples were selected to illustrate the application of basket storage to a complete ginning operation. These examples were based on gins of 10-bale-an-hour capacity and basic volumes of 6,000 bales a year before basket storage was added, although costs for gins with lower or higher capacities or volume could be used with storage costs given earlier.

The PROBLEM and ONE Soluti

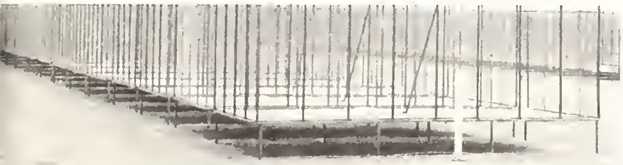
. . . The PROBLEM is growers now harvest cotton with machines much faster than gins can process it and loaded trailers await days before they are unloaded. Growers have to buy additional trailers or stop harvesting, but either is costly.

1 A yard full of loaded trailers awaiting to be ginned.

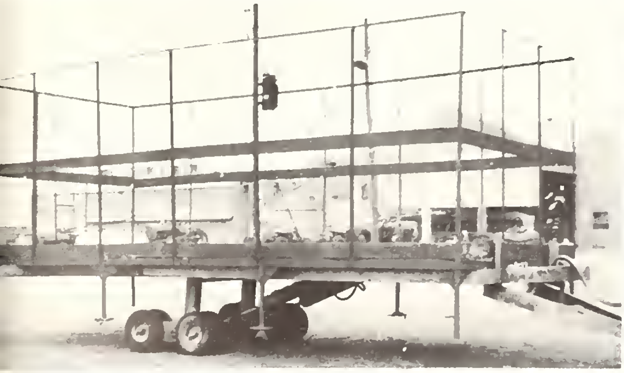
• • • • •



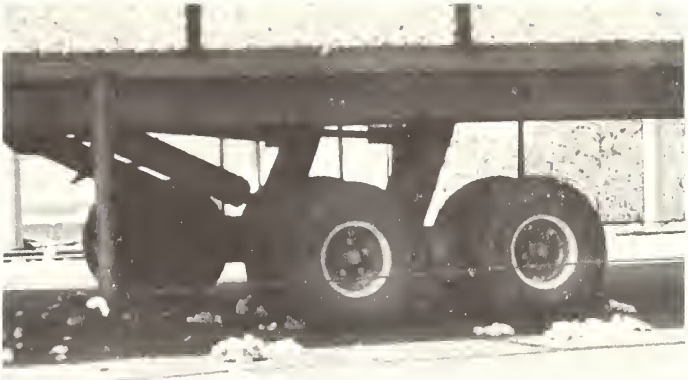
2 Unloading equipment transferring seed cotton from grower's trailer into storage basket.



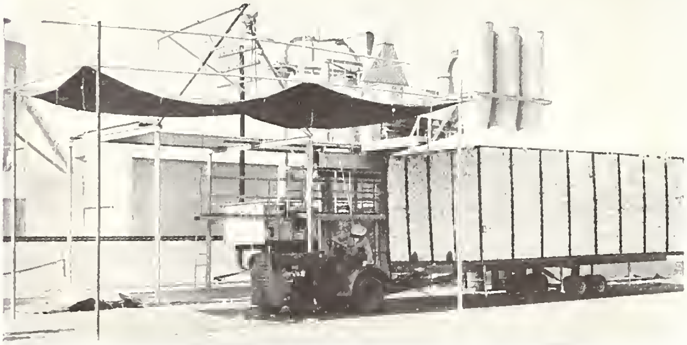
3 Baskets for storing seed cotton during peak of harvest permits unloading many trailers much sooner than gins would get to them.



4 Basket in raised position on hydraulic lift ready for moving.



5 Close-up view of loaded basket in raised position on hydraulic lift

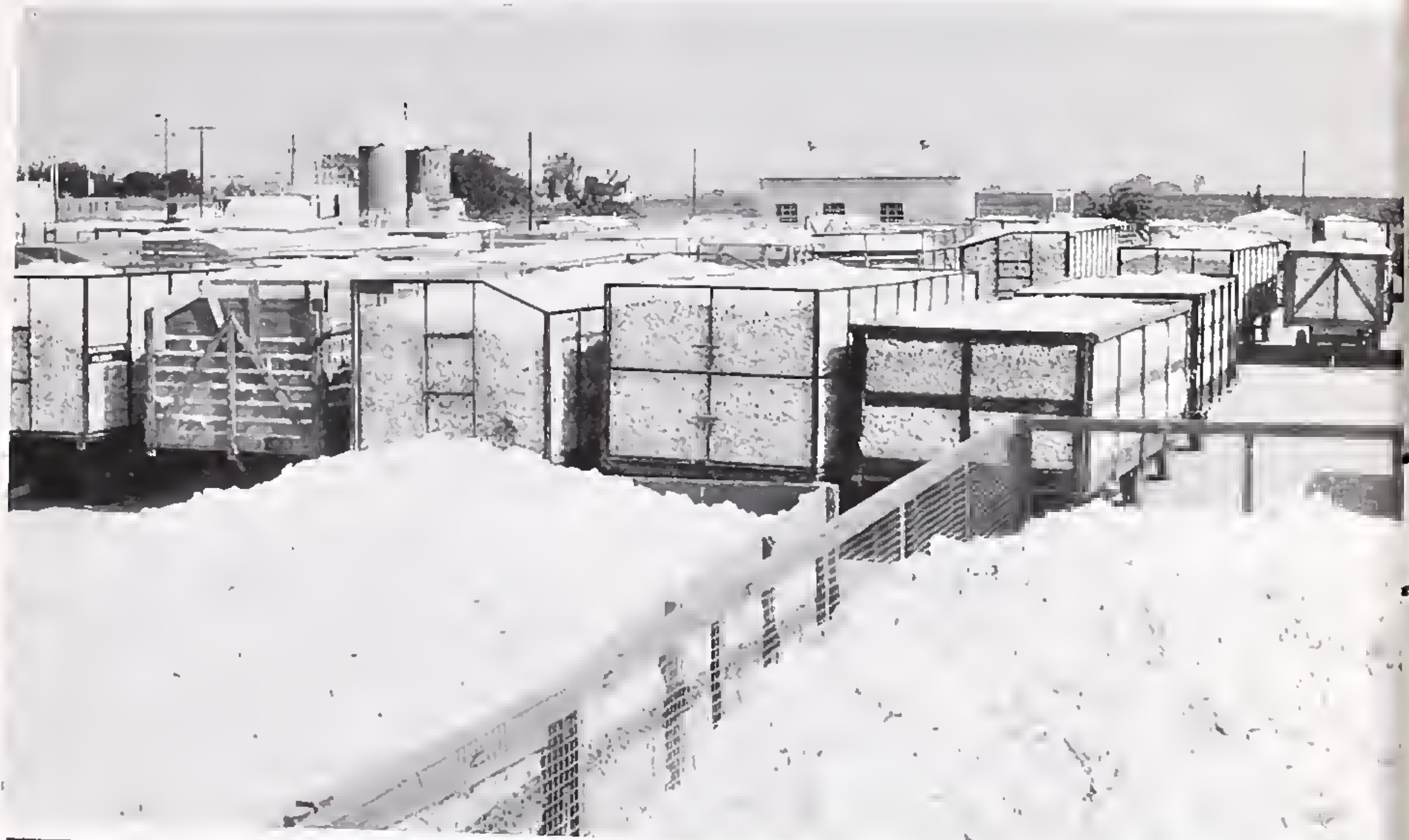


6 Full basket moving under device used for applying tarpaulins.

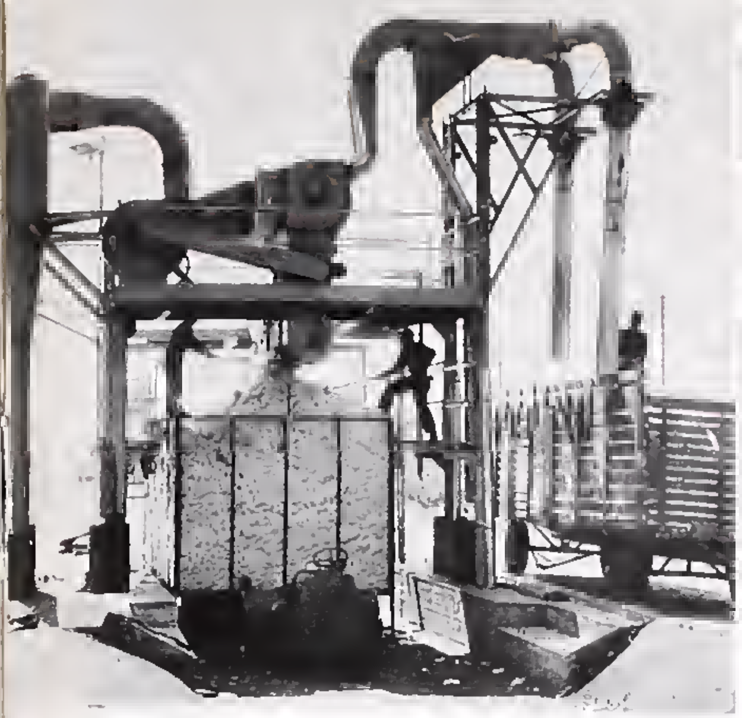
7 Filled baskets in storage near gin. This cotton will be processed when the gin gets to it and when the gin would otherwise be idle.

The PROBLEM and ONE Solution.....

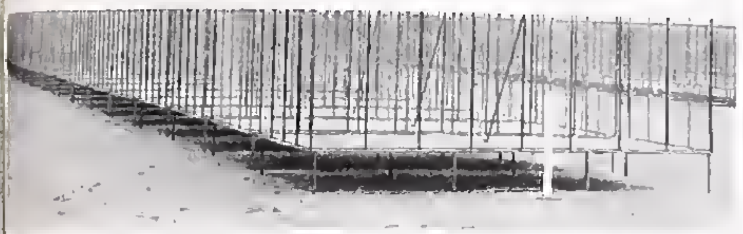
. . . The PROBLEM is growers now harvest cotton with machines much faster than gins can process it and loaded trailers await days before they are unloaded. Growers have to buy additional trailers or stop harvesting, but either is costly.



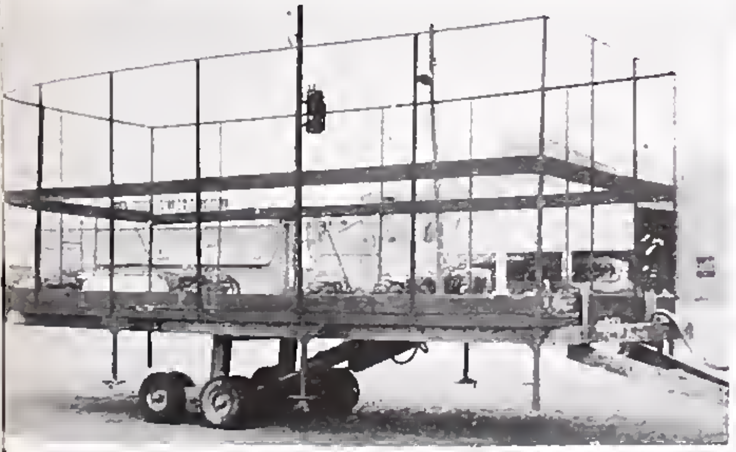
1 A yard full of loaded trailers awaiting to be ginned.



2 Unloading equipment transferring seed cotton from grower's trailer into storage basket.

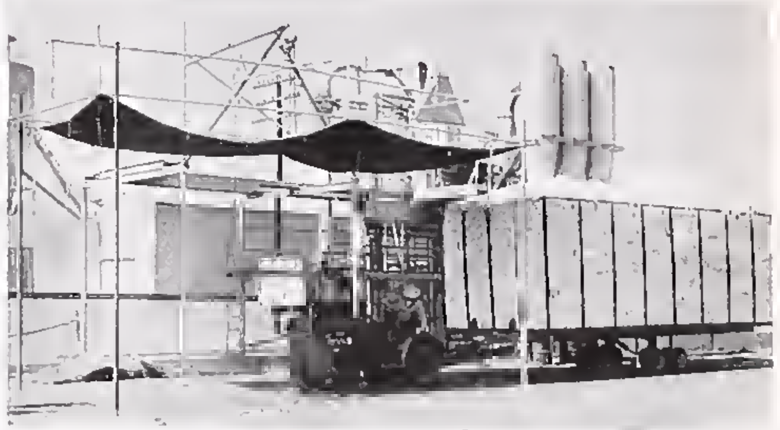


3 Baskets for storing seed cotton during peak of harvest permits unloading many trailers much sooner than gins would get to them.



4 Basket in raised position on hydraulic lift ready for moving.

5 Close-up view of loaded basket in raised position on hydraulic lift.



6 Full basket moving under device used for applying tarpaulins.

7 Filled baskets in storage near gin. This cotton will be processed when the gin gets to it and when the gin would otherwise be idle.

The following costs for ginning cotton at gins using basket storage are to be treated as examples. They are included to illustrate the type of relationships that can be expected from basket storage and to show one way gin owners can develop estimates of costs if a basket-storage system is added at their present gin.

Costs of Ginning Basket-Stored Cotton

Costs of ginning cotton stored in baskets were developed by adjusting the costs of conventional ginning from trailers, as reported in MRR 640.

The estimates of ginning costs began with the basic ginning costs reported in MRR 640 (on pages 9 and 12) for single 10-bale-an-hour size gins on 6,000-bale volumes, ginned in the usual way. These costs per bale in California and Texas were as follows:

Cost item	California	Texas
Variable costs:		
Manager's salary	$1.00	$1.00
Office salaries	.40	.55
Gin labor	2.80	3.65
Repairs and supplies	1.00	1.50
Office supplies	.10	.20
Power	.85	1.65
Fuel and water	.30	.30
Other expenses	.60	.85
Total	7.05	9.70
Fixed costs:		
Depreciation	3.38	3.38
Interest on investment	1.29	1.29
Taxes, ad valorem	.63	.28
Insurance (on gin)	.12	.17
Total	5.42	5.12
Grand total	12.47	14.82

In the next step, the cost of ginning the cotton stored in baskets was developed from these conventional ginning costs. The method employed was to estimate the cost added per bale for ginning the increased volume that basket storage made practical.

In this manner, the cost of ginning the additional cotton stored in baskets in California ranged from $5.76 a bale on 1,000 bales to $5.31 a bale on 6,000 bales (table 5). Those for Texas ranged from $6.16 on 1,000 bales to $6.02 on 4,000 bales (table 6).

Fixed costs of ginning in the usual way, totaling $5.42 a bale in California and $5.12 in Texas, were not included in estimated costs of ginning basket-stored cotton. Plants ginning cotton in the usual way would have the same total fixed costs per year whether or not they ginned cotton stored in baskets. In this analysis, all fixed costs on the gins were included in the costs on cotton ginned from trailers. This procedure does not affect the total fixed costs of gins used in the examples.

Furthermore, cooperatives using baskets would have ginned little, if any, of the cotton stored in baskets had they not used the basket-storage system. This is because growers would have taken their cotton to other gins to get their trailers unloaded faster. Some of the gins surveyed increased their volumes by more than basket capacity because baskets were available for growers needing trailers immediately. Other growers at these gins continued to leave their cotton on their trailers until the gins could get them emptied in their normal turn.

Table 5.--Estimated costs per bale for ginning cotton stored in baskets, by volumes stored, San Joaquin Valley, California, 1964

Cost item	Cost per bale for ginning stored cotton, by bales stored annually --					
	1,000	2,000	3,000	4,000	5,000	6,000
	Dollars					
Variable costs:						
Manager's salary	1.00	1.00	1.00	1.00	1.00	1.00
Office salaries	.40	.40	.40	.40	.40	.40
Gin labor	2.00	2.00	2.00	2.00	2.00	2.00
Repairs and supplies	.50	.50	.50	.50	.50	.50
Office supplies	.10	10	.10	.10	.10	.10
Power	.88	.72	.63	.59	.55	.53
Fuel and water	.28	.26	.24	.22	.20	.18
Other expenses	.60	.60	.60	.60	.60	.60
Total	5.76	5.58	5.47	5.41	5.35	5.31
Fixed costs:[1]	0	0	0	0	0	0
Grand total	5.76	5.58	5.47	5.41	5.35	5.31

[1] All fixed costs of gins were charged to conventional ginning direct from trailers. None were charged to ginning of basket-stored cotton

Table 6 --Estimated costs per bale for ginning cotton stored in baskets, by volumes stored, Lubbock area of Texas, 1964

Cost item	Cost per bale for ginning stored cotton, by bales stored annually --			
	1,000	2,000	3,000	4,000
	Dollars			
Variable costs:				
Manager's salary	1.00	1.00	1.00	1.00
Office salaries	.55	.55	.55	.55
Gin labor	1.00	1.00	1.00	1.00
Repairs and supplies	1.00	1.00	1.00	1.00
Office supplies	.20	.20	.20	.20
Power	1.28	1.23	1.21	1.20
Fuel and water	.28	.26	.24	.22
Other expenses	.85	.85	.85	.85
Total	6.16	6.09	6.05	6.02
Fixed costs:[1]	0	0	0	0
Grand total	6.16	6.09	6.05	6.02

[1] All fixed costs of gins were charged to conventional ginning direct from trailers. None were charged to ginning of basket-stored cotton.

Part of the variable ginning costs per bale were assumed to be the same for cotton stored in baskets as for that ginned from trailers. These were manager's salary, office salaries, office supplies, and other expenses.

Variable costs that were reduced were gin labor, repairs and supplies, power, fuel, and water. The following show why these costs were reduced.

The largest reduction among these costs, especially in Texas, was for gin labor. Gin crews are idle part of the time at conventional gins because of rainy or damp periods longer than about 2 to 5 days during the peak of harvest. They are idle part of the time before and after the peak when gins receive enough cotton to keep a crew on, but less than the capacity of the gin with one crew.

Plants with basket storage can use idle labor in and after the peak harvest period, but not before it, for ginning cotton stored in baskets. Managers surveyed reported ginning from 25 to 100 percent of the cotton they stored in baskets with such labor.

Cost of labor in California for ginning basket-stored cotton was estimated at $2.00 a bale (table 5). That was a reduction of 80 cents a bale from that reported for conventional ginning.

In Texas, only $1.00 a bale was included for labor when ginning from baskets, while $3.65 a bale was reported for ginning from trailers. California gins adjusted the labor they used at conventional gins much closer to capacities of gins than did Texas. Apparently, rainy or damp periods cause more delays during peak of harvest in Texas than in California. These differences were shown in MRR 640, figures 3 and 4.

Costs of repairs and supplies for ginning basket-stored cotton were estimated at 50 cents a bale in California and at $1.00 a bale in Texas. These were the rates on the variable portion of these items used in MRR 640. The fixed portion of repairs, like other fixed expenses on the gin, were not applied to cotton stored in baskets.

The cost of power was calculated according to widely used electric rate schedules in areas where the six gins with baskets were located. Application of these schedules resulted in a lower power cost for basket ginning than for conventional ginnings in all but one instance in the examples. Methods used in calculating power costs are explained in the appendix.

Costs of fuel and water were also reduced because charges usually decline on larger volumes.

Total estimated costs per bale for ginning cotton stored in baskets, as shown in tables 5 and 6, declined by only small amounts on larger volumes included, because only cost of power, fuel, and water declined with increases in volumes and these by only small amounts.

Combined Costs for Storing and Ginning Cotton Stored in Baskets

When costs for storing cotton in baskets (table 3) and for ginning that

Table 7.--Estimated combined costs per bale of storing and ginning cotton in baskets, by volumes stored, San Joaquin Valley, California, 1964

Cost item	Cost per bale of storing and ginning stored cotton, by volume stored annually --					
	1,000	2,000	3,000	4,000	5,000	6,000
	Dollars					
Cost of storing in baskets (from table 3) ----------------	6.22	5.46	5.12	4.94	4.84	4.79
Cost of ginning basket-stored cotton (from table 5)[1] ----------------	5.76	5.58	5.47	5.41	5.35	5.31
Combined cost of storing and ginning--------------------	11.98	11.04	10.59	10.35	10.19	10.10

[1] All fixed costs were charged to conventional ginning direct from trailers. None were charged to ginning of basket-stored cotton.

cotton (table 5) were added, the combined costs per bale in California ranged from $11.98 on 1,000 bales to $10.10 on 6,000-bale volumes (table 7). In Texas, they ranged from $12.89 a bale on 1,000-bale volumes to $11.53 a bale for 4,000 bales (table 8).

These costs were $1.88 a bale lower in California and $1.36 lower in Texas on the largest volumes than on the smallest. In both areas, however, most of this reduction was between 1,000- and 3,000-bale volumes.

Table 8 --Estimated combined costs per bale of storing and ginning cotton in baskets, by volumes stored, Lubbock area of Texas, 1964

Cost item	Cost per bale of storing and ginning stored cotton, by volume stored annually --			
	1,000	2,000	3,000	4,000
	Dollars			
Cost of storing in baskets (from table 4) ----------------	6.73	6.02	5.70	5.51
Cost of ginning basket-stored cotton (from table 6)[1] ----------------	6.16	6.09	6.05	6.02
Combined cost of storing and ginning -------------------	12.89	12.11	11.75	11.53

[1] All fixed costs were charged to conventional ginning direct from trailers. None were charged to ginning of basket-stored cotton.

Total costs of Gins Using Basket Storage

Total costs for the season of gins using basket storage include both conventional ginning costs and costs for storing and ginning cotton stored in baskets.

Example of Total Cost Computation

To obtain an example of total estimated costs, costs for basket storing and ginning, shown in tables 7 and 8, were combined with costs of ginning 6,000 bales in the usual way, as reported in MRR 640.

Average cost per bale for California gins using basket storage ranged from $12.40 to $11.28 a bale on volumes of 7,000 to 12,000 bales (table 9). For Texas gins, these costs ranged from $14.54 to $13.27 on 7,000 to 12,000 bales (table 10).[4]

The total costs per bale handled by gins using basket storage were lower in both States on all volumes than the cost on 6,000 bales ginned from trailers. These reductions ranged from 7 cents to $1.19 a bale in California and from 28 cents to $1.55 a bale in Texas.

Basket-storage capacities can be adjusted much closer to many volumes than can gin capacities. For example, a second 10-bale-an-hour gin would increase capacity by 6,000 bales, but by use of baskets, capacity could be

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[4] In Texas, costs for storing and ginning on 1,000 bales and 2,000 bales were calculated from table 8 and added to those on 4,000 bales to get costs for 5,000 and 6,000 bales, respectively, as shown in table 10.

Table 9.--Estimated total costs of gins using basket-storage systems, by number of bales handled, San Joaquin Valley of California, 1964

Cost item	Number of bales handled[1] --					
	7,000	8,000	9,000	10,000	11,000	12,000
	Dollars					
Costs of --						
Storing and ginning stored bales[2]	11,980	22,080	31,770	41,400	50,950	60,600
Ginning 6,000 bales in usual way @ $12.47 per bale[3]	74,820	74,820	74,820	74,820	74,820	74,820
Total costs	86,800	96,900	106,590	116,220	125,770	135,420
Average cost per bale	12.40	12.11	11.84	11.62	11.43	11.28

[1] 6,000 bales ginned in the usual manner are included in each volume.

[2] Calculated from costs per bale shown in table 7.

[3] Campbell, John D. Cost of Ginning Cotton by Cooperatives at Single-Gin and Two-Gin Plants, California and Texas, 1962 U. S Dept. Agr., Farmer Cooperative Serv., Mktg. Res. Rpt. 640, p. 9. Jan. 1964.

increased in units of 10.5 bales of machine-stripped or 15 bales of machine-picked cotton. Baskets could be added in any number up to capacity of unloading equipment, but very large volumes might require more labor for ginning.

The ability to increase the effective capacity of ginning units by relatively small steps may have an important effect on total cost. For example, assume that two single gins in Texas, each with 10-bale-an-hour capacity, ginned 6,000 bales a season. Both gins expect their volume to increase to 8,000 bales. One gin builds another 10-bale-an-hour gin, and the other adds a basket-storage system to handle 2,000 bales. Estimated costs of ginning at the two-gin plant would be $19.38 a bale (MRR 640, p. 12); but the one with basket storage would have costs of only $14.14 a bale, as shown in table 10. This difference, caused largely by excess capacity, was more than $5 a bale for equal volumes.

Excess capacity at gins, in any form, is usually expensive. But excess basket capacity is considerably less expensive than excess gin capacity. For example, suppose the owners of a single 10-bale-an-hour gin in Texas estimated total receipts to be 12,000 bales. They could build 2,000-bale and 4,000-bale storage systems to handle this volume. But assume that only 8,000 bales were actually received. Their costs would be increased by $13,800 for the year -- the fixed cost on the 4,000 bales of excess capacity. On a per bale basis, costs would increase by $1.72, or from $14.14 to $15.86. However, this is $3.52 a bale less than the $19.38 cost for a two-gin plant with the same excess capacity.

Table 10.--Estimated total costs of gins using basket-storage systems, by number of bales handled, Lubbock area of Texas, 1964

Cost item	Number of bales handled[1] --					
	7,000	8,000	9,000	10,000	11,000	12,000
	Dollars					
Costs of --						
Storing and ginning stored bales[2]	12,890	24,220	35,250	46,120	59,010	70,340
Ginning 6,000 bales in usual way @ $14.82 per bale[3]	88,920	88,920	88,920	88,920	88,920	88,920
Total costs	101,810	113,140	124,170	135,040	147,930	159,260
Average cost per bale	14.54	14.14	13.80	13.50	13.45	13.27

[1] 6,000 bales ginned in the usual way are included in each volume.

[2] Calculated for 1,000 to 4,000 bales from costs per bale shown in table 8. Costs on 1,000 and 2,000 bales, respectively, were then added to those for 4,000 bales to obtain costs for 5,000 and 6,000 bales.

[3] MRR 640, p. 12.

Estimating Total Costs for Gin Plants With Basket storage

Cooperatives and other gin owners, who are considering increasing the capacities of their gin plants, can develop estimates of expected costs at their own plants if basket-storage systems are added. This section suggests a method for developing such estimates.

Table 11 provides a convenient blank form for the use of gin owners in assembling, developing, and combining estimated total costs for their gin plants with basket storage added. The volume expected to be stored in baskets will have to be estimated. Costs for storing and ginning cotton stored in baskets can be estimated for either per bale amounts or by total amounts for the volume. One of these amounts can be converted to the other, of course, by dividing or multiplying by the number of bales involved.

The owner can start with costs shown in gin audits or records of their gins for the preceding year. If the volume expected to be ginned from trailers in the usual manner is about the same as was ginned last year, the costs can be copied directly from the gin audit or records to columns 1 and 2 of table 11. But if the volume expected to be ginned from trailers is substantially different, the costs will need to be adjusted to the expected volume before they are inserted in table 11.

If costs for basket storage are similar to those in either the San Joaquin Valley of California or the Lubbock area of Texas, the ginner may want to use tables 3 or 4. If the expected volume corresponds to volumes in table 3 or 4, costs can be inserted directly for the corresponding volume in column 4 of table 11; if considerably different, such as 3,500 bales, costs for that volume can be estimated from table 3 or 4. The data in tables 3 and 4 have wide application.

If conditions affecting basket-storage costs are substantially different at a gin from conditions in California and Texas, separate estimates can be developed. (However, the methods used in tables 3 and 4 can be applied for the new estimates.) Ratios of bales stored to basket capacities of considerably more or less than 1.5 to 1.0 would be one factor materially affecting costs.

Gin owners will need to develop their own estimates of costs for ginning cotton stored in baskets. The costs they insert in columns 1 and 2 of table 11 provide a base for starting these estimates. Only the increase in costs of gins caused by the cotton stored in baskets, and in excess of basket-storage costs, should be included in columns 5 and 6. For example, ginning of the cotton stored in baskets would not increase the ad valorem taxes paid on the gin. Therefore, no amount for such tax would need to be included in the estimated costs for ginning cotton stored in baskets. Taxes on basket-storage systems were included in basket-storage costs, and taxes on the gin were included in costs of conventional ginning. Estimated costs in tables 5 and 6 of this report may also be referred to in estimating ginning costs.

If the volume anticipated from trailers is different from the volume ex-

Table 11.--Form for estimating grand total costs and costs per bale for the gin plant, if basket storage is added

Cost item	Cost of conventional ginning (from trailers) on ____ bales		Estimated cost of basket storage on ____ bales		Estimated cost of ginning ____ b/c stored in baskets		Grand total cost on ____ bales	
	Total	Cost per bale	Total	Cost per bale	Total	Cost per bale	Total	Cost per bale
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variable costs: Manager's salary								
Office salaries								
Labor								
Repairs and supplies								
Office supplies								
Power								
Fuel and water								
Other								
Fixed costs: Depreciation								
Int. on investment								
Taxes (ad valorem)								
Ins. (bldg. & equip.)								
Total								

pected for storage and ginning from the baskets, total costs from columns 1, 3, and 5 should be added to get the grand total estimated costs in column 7. Cost per bale, column 8, can be obtained by dividing figures in column 7 by the total bales.

In cases where the volumn expected for ginning from trailers is the same as that from basket storage, either columns 1, 3, and 5 can be added to get the figures for column 7, or columns 2, 4, and 6 can be totaled and divided by 2 to complete column 8.

A short cut can be used, but will not provide as much information as the detailed procedures just described. This short cut would consist of adding only totals at the bottom of columns 1, 3, and 5, and inserting them as total for column 7.

Factors Affecting Costs of Storing and Ginning Basket-Stored Cotton

The two major factors influencing the costs of storing and ginning basket-stored cotton were (1) amount of labor used for storing and additional labor used for ginning stored cotton, and (2) depreciation on storage system equipment.

Economic results of basket storage may be substantially influenced or even largely determined by the effects of storage on the quality of cotton. However, these effects are not fixed; conceivably, they could range from severe damage to quality, through no change, to substantial improvement. Quality effects were not included in costs but will be discussed later.

Labor used for storing cotton in baskets and ginning it cost $3.45 a bale in California (tables 3 and 5) and $2.63 a bale in Texas (tables 4 and 6). These costs are equivalent to about three-tenths of the combined costs for storage and ginning of cotton in baskets in California and to about two-tenths in Texas.

Gins surveyed used from 0.4 to 1.4 man-hours per bale in storing cotton. If Texas gins using the larger amount of labor could reduce their labor use 1.0 man-hour per bale, they would reduce their storage cost by about $1.50 a bale. Where basket-stored cotton is ginned by labor already on the gin payroll, but otherwise idle, ginning costs would be reduced by $2 a bale for California (table 5) and $1 a bale for Texas (table 6).

If more than average amounts of labor are used, costs per bale may substantially exceed those shown in this report. Or efficient use of labor could result in lower costs than those shown, especially for ginning basket-stored cotton.

Depreciation shown on storage equipment accounted for about one-fifth or more of the combined cost for storing and ginning stored cotton (tables 7 and 8). Cost per bale for depreciation is determined largely by the number of bales stored per basket.

Baskets and sheds accounted for most of the investment required for storage systems in California. A basket costs $175 and a shed $150, making a total of $325. A rate of 8 percent would show an annual depreciation cost of $26 on basket and shed.

Gins in this survey stored from 0.8 to over 3.0 bales per bale capacity of their baskets. Average use was 1.5 bales per bale of capacity. Low ratios of bales stored to basket capacity not only increase depreciation costs per bale, but other fixed costs as well.

If a basket holding 10 bales were filled only once, the depreciation would be $2.60 a bale. But if the basket were filled twice, depreciation expense would be reduced by one-half, or to $1.30 a bale.

When depreciation cost is $26 on basket and shed and 1.5 bales are stored per bale of basket capacity, the depreciation cost per bale is $1.73. That is a reduction of 87 cents a bale from cost when only 1 bale is stored per bale of basket capacity. There would be a further saving of 43 cents a bale if 2 bales were stored.

In Texas, at a rate of 8 percent, depreciation would cost $14 a year on baskets. At a 40-percent rate on tarpaulins costing $25, depreciation would amount to $10. So the total depreciation on both would be $24. If only 1 bale were stored per bale of basket capacity, or 7 bales per basket, depreciation cost would be $3.43 a bale. If 1.5 bales were stored per bale of basket capacity, this cost would be reduced to $2.29, or by $1.14 a bale. If 2 bales were stored per bale of basket capacity, depreciation cost would be reduced to $1.71 a bale.

Depreciation costs on storage equipment are also reduced by handling larger volumes with the unloading equipment. For example, unloading equipment was estimated to cost $12,000 in Texas (table 2). At an 8-percent rate, depreciation would cost $960. If only 1,000 bales were handled, the cost would be 96 cents a bale, but if 4,000 bales were handled, the cost would be only 24 cents a bale, or 72 cents a bale less.

Efficient use of hydraulic lifts and tractors would assist in lowering storage costs. The number of these items should be in proper ratio with number of baskets used.

With regard to quality, gin managers stated that the effects of basket storage ranged from no change to improvements in quality sufficient to increase the average value by $5 a bale. Improvement in quality was said to result from drying the cotton in the baskets, and from greater uniformity of the ginned cotton through mixing as it is loaded and unloaded. Only one exception was reported. One gin stated that the seed germination was damaged severely on a single basket load, but that load was very "green" or freshly opened.

Problems

1. The basket-storage problem most often reported by gin managers was inadequate capacity of unloading equipment. Trailers needed to be unloaded faster than was possible with present equipment.

One gin had replaced former unloading equipment with high-capacity equipment that handled about 13 bales an hour. High-capacity unloading equipment, where volumes justify it, appears to reduce labor and other costs.

If capacity of unloading equipment, as used in high-capacity gins, is inadequate for volumes expected, pneumatic cottonseed unloaders with large capacities might be adapted for this use. Double driveways and telescopes for two lines of trailers and double driveways for loading storage baskets would also speed up unloading operations.

2. A common problem encountered on basket storage was the keeping of accurate records on the ownership of stored cotton. Better record systems are needed. Visits by managers among other gins using basket storage would perhaps lead to some improvements in record systems.

3. Practices to be followed on basket storage were not clearly explained to members at one gin. This caused misunderstanding and dissatisfaction.

4. One gin manager thought tarpaulins required excessive labor and were not durable enough for basket storage. He thought sheds were much better. Tarpaulins cost less than sheds to begin with, but their net cost may be as much or more if the depreciation rate is 40 percent, as estimated, and if the cost of extra labor is included for handling them. Also, an allowance should be made for greater chance of water seeping into cotton with tarpaulins than with sheds.

5. Ownership of baskets differed among the gins surveyed. Some gins owned all baskets, others owned about one-half and members the other one-half, and at others, the members owned practically all baskets.

The data indicate that gin ownership of storage baskets results in more efficient use of baskets. For example, ginners can refill gin owned baskets more often than growers can. All growers can get their trailers unloaded sooner and, as a result, need fewer trailers. Should a grower's cotton not be placed in baskets for storage, they still would get their trailers unloaded sooner, and their ginning costs would be lower on larger volumes handled by such gins.

At one gin, baskets were ginned in turn as on trailers. This practice amounts to substitution of baskets for trailers, with the gin transferring the cotton. This was not considered basket storage as defined in this report. Usually, the practice of ginning basket-stored cotton only when no trailer loads are waiting on the gin yard is most satisfactory.

6. None of the cooperative gins included in the survey had bur extractors or stick and green leaf machines in their unloading systems.

Inclusion of extracting equipment would increase investments required and would make unloading operations more complex and costly. But extraction of burs and trash would reduce the number of baskets required in areas where cotton is snapped or machine stripped.

For example, if burs and trash were extracted at Texas gins, 15 instead of 10.5 bales could be stored per season in baskets. This would reduce fixed costs for baskets from $2.94 to $2.05 a bale, or 89 cents a bale less. This was determined by applying the rates for fixed costs, as used in table 4, to baskets costing $175 and tarpaulins costing $25 each, or a fixed cost per basket of $30.82 a year.

Costs for extraction of 50 to 90 percent of burs have been estimated to range from 21 cents to $1.17 a bale.

Based on these costs and savings, installation of extraction equipment may be profitable, depending largely on efficiency of extraction and percentage of burs extracted. If extraction equipment were bypassed when ginning stored cotton, perhaps part of the cost for extraction would be recovered, and the condition of stored cotton improved.

Outlook

Each manager of the six gins studied expected basket storage to expand. However, one of them expected only limited expansion. Two cooperative gins were reported to be seriously considering adding basket storage in 1964. Managers of two gins using basket storage reported several visitors who were interested in the method.

Five of the managers reported they can gin cotton faster from the basket system than by the conventional method. One manager estimated a 20-percent increase. Part of the increase arises from less time used between trailers, but a large part is caused by greater uniformity of moisture in stored cotton.

Findings in this study indicate there is an economic basis for expansion of basket storage when good management practices are followed.

Appendix

Methods Used for Calculating Power Costs

The same general procedure and the same electric rate schedules were used in this study as were used in MRR 640. Specific procedures follow:

Cost of Power for Basket Storage

The unloading equipment was operated by a total of 70 horsepower of electric motors. Since 1.0 horsepower is equal to approximately 0.75 kilowatt, then 70 horsepower operated 1.0 hour would be equivalent to 0.75 x 70, or 52.5 kilowatt-hours per hour.

It was estimated that these unloading systems would transfer cotton from trailers to baskets at rates of 9 bales of machine-stripped and 13 bales of machine-picked cotton an hour. At these rates, power consumption would average 5.8 kilowatt-hours per bale for machine-stripped and 4.0 kilowatt-hours per bale for machine-picked cotton.

These rates of power consumption were used to calculate energy consumed for unloading the various volumes. Kilowatt demands were also calculated and used in calculating additional costs for unloading systems.

The kilowatt-hours and kilowatt demands were added to the peak month of gin power consumption and costs calculated according to rate schedules used in MRR 640. The differences in gin power bills with and without basket storage were used as cost of power for unloading systems.

This procedure assumes 1 meter is used for both gin and unloading systems. If separate meters were used, power costs would be somewhat higher under these and most other rate schedules.

Cost of Power for Ginning Basket-Stored Cotton

For ginning basket-stored cotton, it was assumed that 50 kilowatt-hours per bale were used on machine-picked cotton in California and 60 kilowatt-hours in Texas on machine-stripped cotton. These same rates were used for the 10-bale-an-hour gins for these areas in MRR 640.

The kilowatt-hours required for various volumes were added to the power used in the second month. Charges were calculated by deducting power bills for ginning from trailers only from bills for ginning both trailer and stored cotton. Average cost per bale for power used in storage was then calculated.

A similar procedure was followed for the third highest month. The average charge per bale for power in the second and the third highest months were added and divided by 2 to get average cost per bale. This was used in estimates.

This procedure was followed because basket-stored cotton could be ginned in either second or third highest volume month of electrical power use. However, it depends on the time of harvest in a specific year and on meter reading dates as to which month the charge for power used to gin stored cotton would be billed.

Other Publications Available

Using Your Co-op Cotton Gin. Educational Circular 15. William C. Bowser, Jr.

Mechanical Sampling of Cotton. Marketing Research Report 412. Maurice R. Cooper, J. D. Campbell and D. L. Pritchard. (Request copies of this publication from Consumer and Marketing Service, U. S. Department of Agriculture.)

Controlling Protein Level of Meal Production at Cottonseed Oil Mills. Marketing Research Report 437. Elmer J. Perdue and Dale J. Peier.

Effects of Electric Rates on Power Expenses of Cotton Gins -- Arkansas, Oklahoma, Texas. Marketing Research Report 470. John D. Campbell.

SWIG -- Southwestern Irrigated Cotton Growers Association, El Paso, Texas. FCS Circular 29. Otis T. Weaver.

Crushing Cottonseed Cooperatively. FCS Circular 30. Elmer J. Perdue.

Power Expenses of Cotton Gins by Types of Power -- Arkansas, Oklahoma, and Texas. Marketing Research Report 520. J. D. Campbell.

Costs of Ginning Cotton by Cooperatives at Single-Gin and Two-Gin Plants, California and Texas, 1962. Marketing Research Report No. 640. John D. Campbell.

Cotton Cooperatives on the Plains of Texas - Services and Benefits. FCS Circular 33. Henry W. Bradford.

Economics of Delinting Cottonseed to Low Residual Linters at Oil Mills. Marketing Research Report No. 720. Elmer J. Perdue and S. P. Clark.

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